**Water in Crisis - Spotlight on Cambodia**

**By: Oriane Boudinot**

Cambodia is a country located in Southeast Asia, located in an area which experiences the monsoon season from May to November every year, and has the Mekong River which flows through. You wouldn't think that this country would have water issues, but this is a fact of life. Having lived amongst Cambodians for seven months in 2009, I was exposed to some of these issues.

**Drinking Water**

Although drinking water is something that is available by opening a faucet in any Western country, this is a privilege which the West has. In a country like Cambodia, the main source of any villager's drinking water will come from rain fall. Water is collected in huge cement structures which store it for a long period of time. However, this creates unsafe environment parasites, and can also be the source of mosquito reproduction. This means that many people, especially children, get sick with diseases which can be easily treated. However, it is extremely expensive to receive treatment and adequate chemicals to purify the water. When I lived in the orphanage 15 km west of Phnom Penh, the personnel told me that in the beginning of this NGO's history, many children got sick due to poor quality drinking water. They then received enough donations from an organization in Canada, which allowed this organization to buy a water purification system, which has dramatically reduced the number of sick children.

**Contaminated Water**

Contaminated also comes from improper waste disposal. Everyone throws their trash on the floor behind the building where they cook, clean or live. This trash just sits in mucky water, which is part of fields that produce their food. This trash is everywhere in the country, especially plastic bags. This trash leaks some toxins into the ground, which then gets into the water, through surface or ground water.

**Lack of infrastructure**

The lack of appropriate infrastructure in dealing with the excess rain during the rainy season is also a great issue. Every time it rains, the water stagnates in the area, which creates saturated unstable soils, and attracts unwanted living things such as snakes and mosquitoes. Also in the markets, this is an issue with run off toxins being carried through highly congested areas in the cities. This stagnating water also will create unstable grounds for roads, which are mostly dirt roads in this country, creating bad conditions for driving the motorcycles, which is the main form of transportation in Cambodia.

# Water in Crisis - Spotlight on Bangladesh

**By: Saima Hedrick**

The [WHO estimates](http://www.whoban.org/sust_dev_mental_env.html) that 97% of the people of Bangladesh have access to water and only 40% percent have proper sanitation. With a staggering 60% of the population that has to endure unsafe drinking water, the nation is in danger. The availability of this water greatly fluctuates throughout the year as the warmer season brings massive amounts of water in frequent monsoons and the cooler season brings drought. The infrastructure cannot adequately deal with the barrage of water in monsoon season so the water is not saved for the drier months. Of the water that is available, [over 80 percent](http://www.irinnews.org/report.aspx?ReportID=90519) is used for agriculture.

The great rivers (Brahmaputra, Meghna, and Ganges) all originate in other countries and the amount of water that eventually gets to Bangladesh is greatly limited by the booming populations of China and India. [Only 7%](http://www.moef.gov.bd/html/env_bangladesh/env_origin.html) of the total land that creates the watersheds for these rivers is in Bangladesh. Therefore the Bengalis have very little control over how much water they receive from these sources.

Compounding the problem is the [rising salinity of the water](http://www.preventionweb.net/files/8199_Salinity.pdf), which has many contributing factors. One of these factors is the construction of the [Farraka Barrage](http://en.wikipedia.org/wiki/Farakka_Barrage), a structure in India that diverts water from the Ganges to irrigate Indian soil. This decreases the flow of the Ganges thereby causing the salinity to increase. Salinity is also rising due to the sheer number of [shrimp farms](http://www.members.shaw.ca/motirahman/Globalization%20and%20Bangladesh/Chapter%2013.pdf) in various bodies of fresh water. Climate change has also caused rising sea levels which are claiming precious water from freshwater river deltas. This increase in salinity affects the soil and the quality of the ground water.

Not only is the potable water limited but the groundwater, which is used by nearly 90% of the population, is also contaminated with arsenic. According to the WHO, the levels of arsenic have contributed to the [largest mass poisoning in history](http://www.who.int/inf-pr-2000/en/pr2000-55.html), affecting an estimated[30-35 million people](http://www.whoban.org/sust_dev_mental_env.html) in Bangladesh. [Exposure to arsenic](http://www.waterhealthblog.com/2011/03/article-arsenic-exposure-by-saima-hedrick-gmu-mph-candidate.html) can cause cancer and severely damage many integral systems in the human body. Arsenic has been shown to be the cause of death for [1 out of every 5 people in Bangladesh](http://www.msnbc.msn.com/id/37958050/ns/health-health_care/).

As a result, the Bangladeshi government is trying to improve the infrastructure to improve rainwater capture and access to safe drinking water. Contaminated wells have been marked to warn the people away but the painted markers are fading and more than [100,000 safe water points](http://www.unicef.org/infobycountry/files/Towards_an_arsenic_safe_environ_summary%28english%29_22Mar2010.pdf) have been created. New arsenic treatment technologies are also being investigated by the Bangladesh Council of Scientific and Industrial Research.

However, in order to make a significant impact, the government needs to [reinvigorate the arsenic policies established in the 90s](http://www.unicef.org/infobycountry/files/Towards_an_arsenic_safe_environ_summary%28english%29_22Mar2010.pdf) , and change the maximum exposure amount from 50 micrograms to 10 micrograms (as recommended by the WHO).

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# Water in Crisis - Spotlight on Ethiopia

**By: Rebecca Shore**

Similar to many African countries, parts of Ethiopia face water shortages, poor sanitation, and a lack of access to clean water sources. Ethiopia is located in Africa's Horn where drought and politics are two leading causes of water shortage. In a study conducted by Water.org they found that "42% of the population has access to a clean water supply" and only "11% of that number has access to adequate sanitation services". In rural areas of the country, these figures drop even lower, resulting in health problems in the villagers as well as their animals.

In the past twenty years, droughts have affected several areas of the country, leading to ponds, wells, streams and lakes drying up or becoming extremely shallow. Many people living outside of the cities collect water from these shallow water sources, which are often contaminated with human and animal waste, worms, or disease. During months and sometimes years of drought, disease runs rampant through small villages and towns. Frequently there is not enough water for people to bathe, leading to infections and sickness in children. Water borne illnesses, such as cholera or diarrhea, are the leading cause of death in children under five years old in Ethiopia.

In addition to illness, many Ethiopian children, especially girls, face problems with school. Statistically only 45% of kids attend primary school. The others are put to work collecting water each morning and helping their families earn money.

However, not all children face these dire circumstances. In an interview with an Ethiopian Israeli named Liat, she described her experiences as a child and young teenager growing up in one of Ethiopia's small villages as comfortable and joyful. Her and her family lived in Ethiopia until she was 15 and then they immigrated to Israel; now she is 23 years old and has yet to go back. While in Ethiopia, Liat would go every morning with her mother to collect water from the nearby stream. Unlike some Ethiopian families, no one in her family ever got sick from the water they were drinking. "We lived in a natural environment," said Liat, "we never thought about diseases in the water, we just lived off the land." Unlike eight years ago when Liat last lived in Ethiopia, many more families are now affected by the looming water shortages. Additionally, Liat lived without running water, electricity, a toilet or shower. The first time she saw these things and experienced an indoor bathroom was when she immigrated to Israel. Although Liat would never move back to Ethiopia, she wants to visit and experience her roots and see where her family came from.

Kali Shebi, an Ethiopian student at George Mason University, told a different yet similar story about living in Ethiopia. Born and raised in Ethiopia, Kali lived with her family in the capital, Addis Ababa, until she was 15. In the city, she had a very comfortable and comparable life to the one she lives today in Arlington, Virginia. She never had to worry about the cleanliness of the water she was drinking or if her family was going to have enough water for the day. Outside of the city though, Kali's grandmother lived more traditionally. "Each morning, Kali said, "my grandmother would go and collect water from the stream." Then her grandmother would boil the water to purify it, before using it for other uses besides drinking. In Kali's situation, she did not encounter many water scarcity issues, but she saw water collecting processes when she visited her grandmother outside of the city.

Another major concern in Ethiopia is how politics affect the locals. During Colonial times, the Nile River and its tributaries were split up between the nations surrounding it. However today, some Ethiopian farmers are finding themselves without access to water for irrigation because of the way the river was divided hundreds of years ago. As the rainy season becomes shorter due to global warming, the fields are becoming more sandy and dry, making it harder for Ethiopian farmers to survive. The situation in Somalia, which borders Ethiopia, is making water scarcity issues even more exacerbated because of the fighting in and around Somalia. Additionally, almost 66% of Africa's 60 river basins are shared by more than one country. As a result, as Africa faces more problems with water, there could potentially be more fighting over how those river basins should be divided.

Ethiopia is a nation full of beauty and culture. However it is being severely affected by water shortages. Fields are drying up and farmers are fighting over irrigation resources. Also, children in villages are losing out on education and instead are spending their days collecting water for their families. In the coming years, outside organizations will be of great need to help alleviate the country's water shortages.

# Water in Crisis - Haiti

**By Katherine Sentlinger**

As the poorest nation in the western hemisphere, Haiti has to deal with issues of poverty and water scarcity on a daily basis. According to [a study conducted by The Center for Human Rights and Global Justice](http://www.chrgj.org/projects/docs/wochnansoley.pdf), "only 55.2 percent of the population has access to an improved water source, while close to 70 percent does not have direct access to potable water. These figures, however, almost definitely overstate Haitians' access to improved water sources, since public systems are rarely available year round" (15, CHRGJ, et al).

Expenses also often create problems with water availability. [The World Bank](http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/LACEXT/HAITIEXTN/0,,contentMDK:22251393%7EpagePK:1497618%7EpiPK:217854%7EtheSitePK:338165,00.html) estimates that, "around 54 percent of the population lives on less than US$1 a day and 78 percent on less than US$2 (2001 data)" (The World Bank). The people of Haiti often resort to gathering water from 'garbage-filled' rivers to supply their households with water for their daily needs, including cooking and drinking when water becomes too expensive or there they do not have access to a clean water source (36, CHRGJ, et al).

Access to clean, fresh water is a main concern in Haiti, where waterborne illnesses, such as typhoid, cholera, and chronic diarrhea, are the cause of [more than half of the deaths](http://www.haitiwater.org/water_in_haiti/problem.php) in the country every year. Contaminated water is also one of the [leading causes of childhood illness and the very high infant death](http://www.haitiwater.org/water_in_haiti/problem.php) rate in Haiti [(57 for every 1000 births)](http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/LACEXT/HAITIEXTN/0,,contentMDK:22251393%7EpagePK:1497618%7EpiPK:217854%7EtheSitePK:338165,00.html) .

Now, in the months after the massive 7.0 earthquake in early 2010, the problems of water scarcity have increased greatly. The earthquake had a devastating effect on the entire country, including the already inadequate clean water supply. Earthquakes often cause damage to wells and water systems, which are a major source of fresh water for the people of Haiti.

**Water in Crisis - Spotlight on India**

**by Shannyn Snyder**

With a diverse population that is three times the size of the United States but one-third the physical size, India has the second largest population in the world. According to the World Bank, [India has taken significant steps to reduce poverty](http://www.worldbank.org.in/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/INDIAEXTN/0,,contentMDK:20195738%7EpagePK:141137%7EpiPK:141127%7EtheSitePK:295584,00.html) but the number of people who live in poverty is still highly disproportionate to the number of people who are middle-income, with a combined rate of over 52% of both rural and urban poor.

Although India has made improvements over the past decades to both the [availability and quality of municipal drinking water](http://www.unicef.org/india/wes_2832.htm) systems, its large population has stressed planned water resources and [rural areas are left out](http://www.centralchronicle.com/viewnews.asp?articleID=4401). In addition, rapid growth in India's urban areas has stretched government solutions, which have been compromised by over-privatization. Regardless of improvements to drinking water, many other water sources are contaminated with both bio and chemical pollutants, and over [21% of the country's diseases are water-related](http://www.ananthapuri.com/article.asp?title=Water-Problem-in-India&id=48). Furthermore, only 33% of the country has access to traditional sanitation.

One concern is that India may [lack overall long-term availability of replenishable water resources](http://www.ias.ac.in/currsci/oct102007/932.pdf). While India's aquifers are currently associated with replenishing sources, the country is also a major grain producer with a great need for water to support the commodity. As with all countries with large agricultural output, excess water consumption for food production depletes the overall water table.

Many rural communities in India who are situated on the outskirts of urban sprawl also have little choice but to drill wells to access groundwater sources. However, any [water system adds to the overall depletion of water](http://www.earth-policy.org/Books/Seg/PB2ch03_ss2.htm). There is no easy answer for India which must tap into water sources for food and human sustenance, but India's overall water availability is running dry.

India's water crisis is often [attributed to lack of government planning, increased corporate privatization, industrial and human waste and government corruption](http://www.arlingtoninstitute.org/wbp/global-water-crisis/606). In addition, water scarcity in India is expected to worsen as the overall population is expected to increase to 1.6 billion by year 2050. To that end, global water scarcity is expected to become a leading cause of national political conflict in the future, and the prognosis for India is no different.

On a positive note, some areas of [India are fortunate to have a relatively wet climate](http://www.icrisat.org/vasat/droughtweb/reg_water_india.htm), even in the most arid regions. However, with no rain catchment programs in place, most of the water is displaced or dried up instead of used. In these areas, rain harvesting could be one solution for water collection. Collected water can be immediately used for agriculture, and with improved filtration practices to reduce water-borne pathogens, also quickly available for human consumption.

Whatever the means, India needs solutions now. [Children in 100 million homes in the country lack water](http://www.indiatogether.org/2004/apr/chi-manifesto.htm/), and one out of every two children are malnourished. [Environmental justice needs to be restored to India](http://www.sabrang.com/poll04/back/indiachild.pdf) so that families can raise their children with dignity, and providing water to communities is one such way to best ensure that chance.

# Water in Crisis - Spotlight on Kenya

**by Shannyn Snyder**

Kenya's people are, according to the United Nations, [one of the most struggling populations in the world](http://www.un-kenya.org/defaultp.asp). With a [population of approximately 36.6 million and an annual population growth of approximately 2.6%](http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/0,,contentMDK:20140311%7EpagePK:146736%7EpiPK:146830%7EtheSitePK:258644,00.html), the country's poverty index has also continued to steadily rise.

Water scarcity in Kenya has been an issue for decades, as [only a small percentage of the country's land is optimal for agriculture, and the year-round climate is predominantly arid](http://www.eoearth.org/article/Water_profile_of_Kenya). A recent natural disaster also caused major soil degradation and refugee displacement throughout the country.

Kenya's natural water resources also do not provide an equitable delivery of water to the various regions of the country and the country's water basins do not reach an equitable area of the country. This leaves most of the population without any fresh water. Rapid urbanization has also pushed poor urban dwellers to the slums, where there is no water or sanitation, and [overcrowding exacerbates the already hazardous health conditions](http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2134844).

Kenya's water politics are also unique, as there has been a divide between areas that have been privatized and sectors where [investors have been discouraged from developing](http://www.itt.com/waterbook/Kenya.asp). At a time when water privatization is seen as a negative in developing countries because of the high costs that are passed along to the impoverished, lack of development here means a lack of piping, sanitation or tanker service. Rural areas of Kenya are left without water and urban areas aren't much better off, as Kenya's virtually bankrupt government does not have the funds to run pumping stations and existing piping systems are often pirated and in disrepair.

Kenya's water shortage also means that a large population of women and children spend up to one-third of their day fetching water in the hot sun from the nearest fresh water source. This backbreaking work leaves roughly half of the country's inhabitants vulnerable to serious dangers. In addition to exposure to the elements and risk of attack by predators, the primary water gatherers are also the most susceptible to water-borne diseases.

Water pathogens are a huge health problem in Kenya, as the people have been left [unprotected against sporadic epidemics such as cholera](http://kenvironews.wordpress.com/2008/07/29/cholera-in-outbreaks-w-kenya-blamed-on-contaminated-water/) and parasitic worms. The rate of exposure is extremely high because the water is not only contaminated at the basins and pumps where water is collected but the containers are almost always "found," second-hand objects, often previously used for oil, fertilizer or wastes.

# Water in Crisis - Spotlight on Lesotho (may not use)

**By: Lindsay Boyce**

In the Southern tip of Africa rests a little nation called Lesotho; it is a country landlocked by South Africa. In [1966](http://cia.gov/library/publications/thw-world-factbook/geos/lt.html) Lesotho declared independence from the United Kingdom. Through the years there has been some civil unrest, however at this time it is a peaceful nation. It is about the size of Maryland and is made up of highlands, plateaus and hills. Periodic droughts often occur, however the nation relies heavily on the foreign exchange of its water supply in order to stay financially stable.

Economically, Lesotho depends on its water resources to create revenue for the country. This is mostly seen through The [Highlands Water Project](http://allafrica.com/stories/200910040001.html). This project raises millions of dollars each year for this poor country through the sale of water to neighboring countries, particularly South Africa. One of the issues however, is that many of Lesotho's rural and urban citizens do not have access to safe and clean drinking water and often have to walk for hours just to reach water access points that may or may not be working. Many citizen are aware of what the Highlands Water Project does for their country and are aware that another project; the [Metolong Dam Project](http://allafrica.com/stories/200910040001.html) will make water easily accessible. However, this project is not expected to be finished until [2020.](http://allafrica.com/stories/20091004001.html) Due to this problem many low land districts of Lesotho have reoccurring serious water shortages. Once this project is finished it is estimated that the water supply will reach [90](http://allafrica.com/stories/20091004001.html) percent of the urban district of Maseru and sanitation coverage is expected to increase from [15](http://allafrica.com/stories/20091004001.html) percent to [20](http://allafrica.com/stories/200910040001.html) percent. Until then, citizen will continue to have to walk miles each day to access clean water, while the majority of their water supply is being sold to South Africa.

Overall, unlike other African nations it is not the lack of water that is posing the problem in Lesotho. It is the lack of knowledge and the technology to create access to the lowland and rural populations. Interestingly enough, water is Lesotho's largest single source of [foreign exchange](http://allafrcia.com/stories/200910040001.html). Even so, the focus needs to be on the nation’s citizens. The educations and technology needs to be set in place by the national government in order to finish projects such as the Metolong Dam Project so that citizens will have the necessary access to clean and safe drinking water.

# Water in Crisis - Middle East (may not use)

**by Alexandra Barton**

[The Middle East](https://www.cia.gov/library/publications/the-world-factbook/region/region_mde.html) has experienced many environmental concerns lately. Water resources are becoming increasingly scarce, especially for the millions there who already lack access to sanitary water. Some of these countries, including Yemen, the United Arab Emirates, Saudi Arabia, and Iraq, are facing unique problems that require global, immediate attention. Beside their [neighboring location](http://www.travelnotes.org/MiddleEast/images/middle_east2.gif) , one shared factor of all these countries is their lack of water resources and poor water management.

The Middle East has some of the [largest oil reserves in the world](http://www.eia.doe.gov/emeu/international/reserves.html), which produces most of the area's wealth. Even so, the region's climate and environment make living harsh. The Middle East requires water resources and suitable land for agriculture. Much of the land that is available for producing food is destroyed by [increasing desertification](http://www.memritv.org/newsletter/iraq1.JPG).

Desertification is a [sweeping environmental problem](http://soils.usda.gov/use/worldsoils/mapindex/desert.html), with vast effects in countries such as Syria, Jordan, Iraq, and Iran. Universal causes for a spread of arid environment are unsustainable agriculture practices and overgrazing. Agriculture uses [85 percent of water](http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTWDRS/EXTWDR2010/0,,contentMDK:22303545%7EpagePK:64167689%7EpiPK:64167673%7EtheSitePK:5287741,00.html) in this region. It is common to misuse land by heavy irrigation in the Middle East. In the area [droughts are more frequent, and contribute to the changing landscape](http://postconflict.unep.ch/publications/Iraq_DS.pdf). The overuse of water in agriculture is affecting the countries' already undersized water resources.

Jordan, located in the Syrian Desert, and Yemen, on the southern tip of the Arabian Peninsula, both [endure severe water scarcity](http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:21253203%7EpagePK:64257043%7EpiPK:437376%7EtheSitePK:4607,00.html) in the Middle East. For example, Jordan's [average freshwater withdrawal](https://www.cia.gov/library/publications/the-world-factbook/geos/jo.html) is less than ten percent of Portugal's average, despite being the same size. The [cost of water in Jordan increased thirty percent](http://www.sidnlps.org.pk/available_online/water2025-tanveer.pdf) in ten years, due to a quick shortage of groundwater. Yemen has one of the highest worldwide rates of malnutrition; over [thirty percent of its population does not meet their food needs](http://www.globalsecurity.org/military/library/news/2010/07/mil-100719-irin02.htm). In recent years, Yemen has not been able to produce enough food to sustain its populations. Water scarcity has damaged the standard of living for inhabitants of the Middle East.

The United Arab Emirates, located on the Arabian Peninsula, is famous for its [luxurious cities](http://files.myopera.com/arsa54/albums/109460/Burj%20Al%20Arab%20Hotel,%20Dubai,%20United%20Arab%20Emirates.JPG) filled with lavish resorts, shopping, and attractions. The livelihoods of these extravagant emirates might create the assumption that water scarcity is not a problem for these rich states. In reality, however, the UAE is confronted with a serious depletion of their available water resources. A report from the Emirates Industrial Bank in 2005 said that the UAE had the [highest per capita consumption of water in the world](http://www.un.org/special-rep/ohrlls/IPS-UN%20Journal%20news.pdf). Additionally, for the past thirty years the water table of this region has [dropped about one meter per year](http://www.columbia.edu/cu/mpaenvironment/pages/documents/AbuDhabiFinalReport.pdf). At this current rate, the UAE will deplete its natural freshwater resources in about fifty years. Even with a large amount of desalination plants to reduce water deficiency, the UAE needs to adjust its water use habits before its [energy consumption doubles](http://www.climate.org/publications/Climate%20Alerts/Winter2009/UAE.html) in 2020.

Desalination plants are an overuse of water resources in the Middle East. [Seventy percent](http://ga.water.usgs.gov/edu/drinkseawater.html) of desalination plants in the world are located in this area, found mostly in [Saudi Arabia, the United Arab Emirates, Kuwait, and Bahrain](http://www.worldwater.org/data20062007/Table21.pdf). While the plants produce water needed for the arid region, they can manufacture problems for health and the environment. The seawater used most in desalination plants has high amounts of boron and bromide, and the process can also remove essential minerals like calcium. Also, the concentrated salt is often dumped back into oceans where the [increased salinity](http://www.greenofficeprojects.org/blog/images/desalination.jpg) affects the ocean's environment. The plants harm local wildlife and add pollutants to the region's climate. In addition, desalination is the most energy-costing water resource. The [Pacific Institute](http://www.pacinst.org/reports/desalination/desalination_report.pdf) explains that the high use of energy results in raised energy prices and higher prices on water produced, hurting the consumer. The water produced can be beneficial towards substituting any lack of freshwater, but these areas have tendencies towards overuse of their natural resources. Concerns with the large amount of desalination plants in the Middle East focus on the improper dependency they will cause, instead of encouraging alternate forms of water and energy and conserving freshwater.

The Middle East has numerous struggles with its current water resources, and the region needs more than one solution to generate an optimistic environmental position for the future.

# Water in Crisis - Spotlight on Nepal

**By: Sahisna Suwal**

Nepal is a landlocked nation with the current population of over 27 million people. As reported by the World Bank, Nepal is one of the poorest nations in the world with an estimated [GDP per capita of US$470.](http://www.worldbank.org.np/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/NEPALEXTN/0,,contentMDK:22147453%7EpagePK:141137%7EpiPK:141127%7EtheSitePK:223555,00.html) With a staggering [42 percent of the population](http://www.who.int/countryfocus/cooperation_strategy/ccsbrief_npl_en.pdf) living below the poverty line and only [27 percent](http://www.who.int/countryfocus/cooperation_strategy/ccsbrief_npl_en.pdf) with improved access to sanitation, there are quite a number of issues facing Nepal. Some of these significant challenges are related to water pollution and water scarcity.

Water is one of the basic human necessities but a large proportion of the Nepalese population is devoid of access to safe and adequate drinking water. According to the Department of Water Supply and Sewerage in Nepal, even though [an estimated 80% of the total population has access to drinking water,](http://www.nepal.watsan.net/page/534) it is not safe. Those belonging to poor and excluded groups in rural areas have limited to no access. Many in remote areas have to rely on small brooks running from the mountains and spend hours traveling to get water. Still the drinking water available is not always safe as [supplied water is often polluted](http://www.nepal.watsan.net/page/555). One of the reasons for this is due to the fact that the surface and ground water in the Kathmandu Valley is deteriorating by natural and anthropogenic contaminations. The surface water is polluted by [industry and domestic waste along with discharge of untreated sewage](http://kumj.com.np/ftp/issue/13/128-134.pdf) from tightly packed residential neighborhoods. It is without a doubt that the domestic sewage system is deemed one of the top sources of water pollution that seeps into rivers and lakes, which are the primary sources of drinking water. The capital city of Kathmandu is estimated to produce[150 tons of waste](http://kumj.com.np/ftp/issue/13/128-134.pdf) daily and almost half of this is dumped into rivers and [80 percent of the wastewater](http://kumj.com.np/ftp/issue/13/128-134.pdf) is generated by households. In addition, due to the increasing population and establishments, surface water sources alone has become inadequate to service everyone.

In some of the rural regions of Nepal communities still rely on getting their drinking water from tube wells. Recently, one of the major concerns in these regions, especially in the region of Terai, is [groundwater contamination from arsenic](http://www.enpho.org/main/index.php?option=com_directory&view=subcat&id=1&Itemid=96). The Terai Region contains sedimentary layers of sand, gravel deposits interlocked with flood plains carried by rivers and is extremely vulnerable to arsenic contamination.

As only 27 percent of the population has access to basic sanitation, those without access rely on local surface water sources like rivers for bathing and washing clothes. At the same time, the establishments of water treatment facilities throughout the urban and rural regions are limited. As a result, Nepal faces a high number of water-borne diseases [such as diarrhea, dysentery, typhoid, gastroenteritis and cholera.](http://www.nepal.watsan.net/page/555) Starting with the dry season in the month of March to the end of the rainy season in September, one is extremely vulnerable to waterborne illnesses. Coupled with the unhygienic environmental situation, the risk of food and water contamination is increased. Children under the age of five are the most affected with an estimated [44,000 children dying](http://webcache.googleusercontent.com/search?q=cache:BiIWAg7fEBIJ:www.sciencedaily.com/releases/2001/12/011210162809.htm+water+borne+illnesses+in+nepal,+children&cd=17&hl=en&ct=clnk&gl=us&client=firefox-a&source=www.google.com) every year in Nepal from waterborne diseases.

The demand for water is increasing significantly in Nepal and access to safe and adequate drinking water is crucial. The public lacks awareness and education on proper sanitation issues and domestic and industrial wastewater treatment plants need to be widespread. Nepal struggles to overcome this obstacle and needs solutions to eradicate this so that its citizens can live healthier lives.

# Water in Crisis - Spotlight on Sierra Leone

**by Alexandra Barton**

Sierra Leone is a familiar and news-worthy country. It is most often noted for its large and controversial industry of diamond mining. A brutal civil war that lasted a decade has left many images of [amputees](http://www.polarisimages.com/Polaris-News/archives/sierralarge.jpg) and refugees, impoverished and displaced. Added to these struggles, Sierra Leone is marked by the poorest standards of living. It has the seventh lowest life expectancy and one of the [highest infant mortality rates](https://www.cia.gov/library/publications/the-world-factbook/rankorder/2091rank.html?countryName=Sierra%20Leone&countryCode=sl&regionCode=af&rank=14#sl) in the world. Seventy percent of the population [lives below the poverty line](https://www.cia.gov/library/publications/the-world-factbook/fields/2046.html?countryName=Sierra%20Leone&countryCode=sl&regionCode=af&#sl).

Sierra Leoneans collect most of their drinking water from polluted sources. Pollutants and poor sanitation are attributed to some of the health problems in the country. Sierra Leone is one of the toughest countries to survive in. The [average life expectancy](https://www.cia.gov/library/publications/the-world-factbook/rankorder/2102rank.html?countryName=Sierra%20Leone&countryCode=sl&regionCode=af&rank=198#sl) for a Sierra Leonean is only 56 years. One of the lowest in the world, much of this statistic can be blamed on poor living conditions. Almost [half](http://hdrstats.undp.org/en/countries/country_fact_sheets/cty_fs_SLE.html) of the population is not using a protected water source for drinking. Most of the unsafe drinking sources are freestanding water, such as ponds, and unprotected wells. [Infections and parasites](https://apps.who.int/infobase/Mortality.aspx?l=&Group1=RBTCntyByRg&DDLCntyByRg=AFR&DDLCntyName=1001&DDLYear=2004&TextBoxImgName=go), most found in contaminated water, lead to the largest cause of death in Sierra Leone. Poor sanitation generates high risk of hepatitis A and Typhoid fever. Stillwater breeds malaria-carrying mosquitoes that plague the region with one of the [most common deadly infections contracted in the area](http://www.who.int/whosis/mort/profiles/mort_afro_sle_sierraleone.pdf). Overall, health and standard of living are poor.

Sierra Leone's environment is disturbing production of agriculture and management of water. It has a rainy season about six months of each year. The rain is too torrential to be collected or used properly. Floods fill wells with [waste](http://www.hyderconsulting.com/SiteCollectionImages/Careers/Sierra%20Leone%20-%20main%20image.jpg) and spread contaminated water to other drinking sources. For the amount of [rain that soaks their land](http://news.bbc.co.uk/nol/shared/spl/hi/picture_gallery/07/africa_sierra_leone_slum/img/2.jpg) during the summers, Sierra Leoneans are confronted by equally difficult droughts during a winter dry season.

This country has insubstantial water storage to last through their dry season. It withdraws only [one-third](http://www.worldwater.org/data20062007/Table%202.pdf) the amount of freshwater of other countries in similar size. Even though 95 percent of water is used agriculturally, [ninety percent](http://www.uneca.org/awich/Reports/Sierra%20Leone%20%20Water%20and%20Sanitation%20Policy-Final.pdf) of food is imported in to Sierra Leone (4.3). With high costs of food, the average caloric intake for a Sierra Leonean is harmed by the country's inability to produce population-sustaining agriculture.

Chemicals used during agriculture production are polluting surface waters where many rural citizens collect their drinking water. [Mining](http://media-2.web.britannica.com/eb-media/15/10515-004-4ADCE404.jpg) has caused [land degradation and water pollution](http://www1.american.edu/TED/leone.htm). [Deforestation](http://rainforests.mongabay.com/20sierraleone.htm) by mining has depleted water resources, as well as slash-and-burn farming, urbanization, and infrastructure building.

The government of Sierra Leone has a difficult task in managing water resources. It struggles to ensure distribution to areas that require sufficient drinking water. For example, the Guma Valley Water Company, which provides water for the capital of Freetown and its surrounding areas, [has not been able to accommodate](http://www.cottontreenews.org/content/view/2347/68/) refugees and immigrants coming in to the city.

Overall, the public lacks awareness for water management, and the government does not have resources to maintain and distribute clean water. Sierra Leone's environment is harming its residents, and spreads diseases that make the country nearly uninhabitable.

# Water in Crisis - Spotlight on South Africa

South Africa is a country located at the Southern Tip of Africa. About twice the size of Texas it is home to [49 million](http://www.cia.gov/library/publication/the-world-factbook/geos/sf.html) people. This country has been stricken by affects from the long standing apartheid to the devastation that diseases such as HIV/AIDS and TB have caused. Now another crisis looms in the distance: Water. As more and more people migrate into cities from rural villages the pressure for the city to meet the water demands is ever increasing.

There are many reasons that attribute to this growing water crisis in South Africa. Climate change has affected water supplies within the region. Rains that usually come and supply the country's water has come infrequently. For example in Durban the Dams are [20 percent](http://www.iol.co.za/news/south-africa/kwazulu-natal/water-shortages-loom-for-durban-1.1036749) lower than at the start of 2010. Due to this fact cities are looking to impose water restrictions on communities.

Another problem that Durban in particular faces is stolen water. According to one report [35 percent](http://www.iol.co.za/news/south-africa/kwazulu-natal/water-shortages-loom-for-durban-1.1036749) of the city’s water is stolen or given out through illegal connections.

Also, preventative measures that were put in place such as the construction of dams in the area have not even started or are still in the process of being built and those structures that are in place now are slowly collapsing. Those in rural areas still lack access to water. One report stated that in 2008 about [5 million](http://www.irinnews.org/Report.aspx?ReportId=82750) people lack access to water and [15 million](http://www.irinnews.org/Report.aspx?ReportId=82750) lack access to basic sanitation. This number has improved greatly since the end of apartheid in 1994, however these numbers are still too high and not one person should ever lack access to the most basic necessity of life, which is water.

Interestingly enough South Africa boast one of the most clean water systems in the world, however due to the lack of sanitation and access in the country's rural communities the threat of [water borne disease](http://www.irinnews.org/Report.aspx?ReportId=82750) is steadily increasing. The Vaal River, the largest river in South Africa and popular tourist destination is becoming increasingly contaminated with fecal material due to the lack of sanitation supplies. It is so bad that the local water agency [Rand Water](http://www.irinnews.org/Report.aspx?ReportId=82750) issued a statement that contact with the river may lead to serious infection. Wildlife is also being affected from the raw sewage run off. A court-ordered mandate was issued to remove [20 tons](http://www.irinnews.org/Report.aspx?ReportId=82750) of dead fish from the river after a local NGO [SAVE](http://www.irinnews.org/Report.aspx?ReportId=82750) (Save the Vaal River Environment) took the Emfuelni munincipilty to court for leaking raw sewage into the river. They blamed the reason for dumping sewage in the river on old pipes.

Overall, infrastructure is lacking, whether or not it is old pipes or ignorance the South Africa water crisis is here and affecting millions. There has been a backlog in services since the end of apartheid and that needs to change. The national and local governments of South Africa need to do a better job of offering services to their people. Supplies need to be given to those most in need. By taking care of the rural population the government will be helping the cities, because it is these rural communities where the damage to the water supply is beginning due to lack of access to sanitation supplies and clean water education.

# Water in Crisis - Spotlight on Sudan

**by Alexandra Barton**

Sudan faces ecological crises like water scarcity and desertification. Rural Sudanese are displaced often by changing landscapes and a lack of agricultural production. The demand for water increases, but its availability to the country's inhabitants continually remains low. Access to water is needed, as much of Sudan's country has become neglected.

The livelihood of Sudan depends on its excess use of its water sources. Eighty percent of the country works in agriculture, [which accounts for 97% of its water use](https://www.cia.gov/library/publications/the-world-factbook/geos/su.html). Most farms are rural and fed by rainwater. They provide for a family or a small community, making them the majority means of living for the Sudanese. Yet, their farming practices are hurting the environment. Much of Sudan's land is cultivated by [mechanized farming](http://postconflict.unep.ch/sudanreport/sudan_website/doccatcher/data/Photographs%20Figures%20and%20Captions%20by%20Chapter/Ch8/Chapter%20photos/8.4a_mechanized%20agric_0092.JPG). This intense agricultural system has reduced arable soil, and according the United Nations Environment Programme, has caused [desertification to spread](http://postconflict.unep.ch/publications/sudan/03_disasters.pdf). The irrigation used to feed the mechanized farms and [intense cultivation](http://postconflict.unep.ch/sudanreport/sudan_website/doccatcher/data/Photographs%20Figures%20and%20Captions%20by%20Chapter/AAA%20Executive%20summary/Chapter%20photos/ES6%20Degraded%20land%20DSC_0052.JPG) by rural Sudanese are causal to the arid environment diffusing over Sudan.

Women and children must devote the most time in their days to [gather water](http://www.wunrn.com/news/2010/02_10/02_08_10/020810_women2_files/image001.jpg) from distant sources. They risk their health and safety by bearing frequent trips to a well remote from their home. Additionally, the women lose productivity from other domestic duties. In Sudan about [two percent](https://www.cia.gov/library/publications/the-world-factbook/geos/su.html) of water is available for domestic use (In the United States, water for domestic use accounts for [13%](https://www.cia.gov/library/publications/the-world-factbook/geos/us.html) of total supply).

Most of Sudan's currently accessible underground water is [shared with surrounding countries](http://www.circleofblue.org/waternews/2010/world/perspective-sudan-land-of-water-and-thirst-war-and-peace/). Sudan utilizes part of the NileRiver Basin, but its use is not regulated or maintained by the government. This unrestrained use of shared water, mostly for irrigation and energy, [creates tension with neighboring countries](http://postconflict.unep.ch/sudanreport/sudan_website/doccatcher/data/documents/Rising%20Tensions%20over%20the%20Nile%20River%20Basin.pdf) like Egypt and Ethiopia. The United Nations Environment Program (UNEP) uses the term [water stress](http://www.cfr.org/publication/11240/water_stress_in_subsaharan_africa.html) to refer to a situation where political or economic problems occur because of a lack of water. According to the Water Systems Analysis Group at the University of New Hampshire, about [a quarter of Africa's population suffers from this problem](http://www.ncbi.nlm.nih.gov/pubmed/16042282?dopt=Abstract). Sudan has a critical case of [water stress](http://www.regional.org.au/au/asa/2004/plenary/1/1994_rijsbermanf.htm#P120_24233).

The Sudanese are at high risks for contracting waterborne diseases. In 2006 there were [476 deaths caused by diarrhea](http://www.who.int/csr/don/2006_06_21a/en/index.html) in just five months, with Cholera-causing bacterium present in stool samples. Similarly, the Darfur region had [3753 reported cases of hepatitis E](http://www.who.int/csr/don/2004_09_08/en/index.html) from May to August 2004. Contaminated drinking water may also cause Dracunculiasis, or [Guinea Worm Disease](http://www.cdc.gov/ncidod/dpd/parasites/dracunculiasis/factsht_dracunculiasis.htm). It can rapidly affect a water supply for a village by one infected person, harming the total area. Three out of five cases of Guinea Worm Disease come from Sudan. Open water sources, such as standing ponds, are common modes of transferring diseases in villages.

Environmental changes have left the Sudanese to struggle for their own survival. The country strains to provide clean, accessible water to all regions.

# Water in Crisis - Spotlight on Swaziland

**By: Lindsay Boyce**

Swaziland is a land locked country located in the Southern tip of Africa. It borders the countries of South Africa and Mozambique. It is unique in that it is one of the only true monarchies left in the world. At its head is [King Mswati III.](https://www.cia.gov/library/publications/the-world-factbook/geos/wz.html) Like many countries throughout the world and particularly in Africa, access to water and the availability of water are becoming hard to obtain and often water access are only for those considered to be elite.

In a landlocked country access to water inevitably comes through access to ground water. In Swaziland [3,000](http://washafrica.wordpress.com/2009/11/06/swaziland-more-boreholes-no-water/) boreholes have been drilled in the country since 1986. However, [40](http://washafrica.wordpress.com/2009/11/06/swaziland-more-boreholes-no-water/) percent of the population does not have access to clean water and about [90](http://washafrica.wordpress.com/2009/11/06/swaziland-more-boreholes-no-water/) percent of the community water projects are not functioning. Also, those in charge of these water projects often lack the knowledge needed to keep them running. Many people have to travel long distances and wait for the water to services. Often times nearby are pumps for boreholes, however they have broken down and have not been fixed, making it difficult for many people around the region to get access to clean water.

Another problem seen in Swaziland is that about only [10 percent](http://washafrica.wordpress.com/2009/11/06/swaziland-more-boreholes-no-water/) of Swaziland ground water has been accessed. However [90 percent](http://washafrica.wordpress.com/2009/11/06/swaziland-more-boreholes-no-water/) of the countries citizens depend on that groundwater, many of which are from rural areas.

One component not usually mentioned is the fact that in Swaziland and many other African countries, [foreign investors](http://www.irinnews.org/Report.aspx?Reportid=74734) have a big influence on the country's economy. In Swaziland there have been threats of investors pulling out of the country due to the water scarcity issues.

Overall, water scarcity issues continue to persist and it will take time and change to combat the issues of water scarcity. The majority of the issues revolve around lack of access and knowledge. Swaziland in particular needs to take the steps to increase education and knowledge about how the water pumps work and how to fix them when they break down. Also, if the pumps are not reliable and or they don't have the resources to educate their citizens then the government needs to develop an alternative plan that allows access to the precious ground water in which so many Swazi's depend on. In Swaziland in where the country is one of the only truly remaining monarchies it will be up to the king whether or not he sees prosperity through this otherwise tragic crisis currently unfolding in this Southern African nation.

# Water in Crisis - Spotlight on Tanzania

**By: Rebecca Shore**

Like many poor nations around the world, Tanzania suffers from serious issues involving its people in regards to water. In a nation where one third of the country is arid to semi-arid, it is very difficult for people to find access to clean, sanitary water if they don't live near one of the three major lakes that border the country. As a result, Tanzania's ground water is the major source of water for the nation's people; however it's not always clean. Many of these ground water wells are located near or next to toxic drainage systems, which leak into the fresh ground water and contaminate it. Consequently, Tanzanians turn to surface water which contains things like bacteria or human waste; and people have no choice but to drink from, bathe in or wash their clothes in these areas. According to Tanzania National Website, water-borne illnesses, such as malaria and cholera "account for over half of the diseases affecting the population," because people don't have access to sanitary options.

Diseases stemming from contaminated water aren't the only problem plaguing Tanzanian society. In a household where money is scarce and daughters and mothers have to spend several hours each day walking to get water from pumps, they run the risk of being attacked or raped. TGNP, Tanzanian Gender Networking Program, found in a study of poor households "that the lack of safe, sufficient, and affordable water in Tanzania had increased rates of gender-based violence and the number of girls dropping out of school." Families who don't have money for water, let alone school, have no choice but to send their daughters out to collect water, possibly resulting in these episodes of violence. Unfortunately, the choices of these families are limited, they need water to survive.

As severe as the situation was, Tanzania's government attempted many times to fix it, with no avail. They understood the desperate need for water in poor areas of the country, so in 1971 the government instituted a 20 year Rural Water Supply Program. This program aimed to provide "access to adequate, safe, dependable water supply within a walking distance of 400 meters from each household" (The Reform of Water Sector in Tanzania). Under this program, the government also wanted to provide free water to its citizens, because water is a basic human right. However, as positive and hopeful as this program was, it failed to deliver because of issues with beneficiaries, technology, and its approach. In 1991, the government tried to implement the National Water Policy, which too needed to be revised and ultimately failed.

In 2003, when Tanzania had tried and was unsuccessful at fixing its water crisis, they came under pressure from the World Bank to privatize their water or not be given international aid and funding. So in 2003 a British corporation called Biwater came into the country and took over their water system. However, Tanzania's water problems only continued to get worse with Biwater in charge. Women were still being attacked when gathering water, because they still needed to walk long distances to access a pump. Additionally, people were still dying from water borne illnesses, and cities were still without any access to sanitary water. As a result, in 2005 the Tanzanian government took Biwater to court in London for breach of contract. They won the case and Biwater had to pay $7 million in damages to Tanzania.

In Tanzania today, the water situation is not fixed nor nearly perfect, but the government and the people know how important it is to have access to sanitary options and continue to work towards that goal.

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# Water in Crisis - Spotlight on Thailand

**By: Sahisna Suwal**

The Kingdom of Thailand is located in Southeastern region of Asia with a population of over 68 million people and covers a land area of [513,115 square kilometers](http://www.wepa-db.net/policies/state/thailand/thailand.htm). There are four main geographical regions in the country: the North, the Central Plains, the Northeast, and the South. There are a total of 25 river basins in the country and Thailand's [annual rainfall is around 1700 mm.](http://www.wepa-db.net/policies/state/thailand/thailand.htm) Like other Asian countries, increasing population, urbanization, agricultural and industrial expansion is impacting the water quality of various water sources. Pollutants from human activities also contribute to the degradation of the water quality. The severe flooding in the rainy season and extreme drought in the dry season could become two major sources of Thailand's water crisis.

The primary sources for drinking water for many Thai citizens are from surface and ground water sources. Untreated domestic sewage, industrial wastewater and solid hazardous wastes have increased in the surface water bodies. It is reported [that one third of the surface water](http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/EXTEAPREGTOPENVIRONMENT/0,,contentMDK:20266329%7EmenuPK:537827%7EpagePK:34004173%7EpiPK:34003707%7EtheSitePK:502886,00.html) is of poor quality in Thailand. The quality of surface water does vary across the four regions of the country but tests show that surface water in the Northern Central and Southern regions are [the poorest quality.](http://www.wepa-db.net/policies/state/thailand/thailand.htm) The largest source of groundwater is in the Lower Central plain surrounding Bangkok and is used to meet the region's water demands. Agricultural run-off pollutants, aquaculture and sewage are polluting the groundwater that is available. In addition, there isn't a clear policy in extracting groundwater beyond sustainable yield levels so there is over-exploitation of groundwater extraction rates.

Thailand's changing climate patterns has led to instability and challenges to the people and the infrastructure. Drought is being caused by irregular rainfall and has become a significant issue in Thailand in the recent years. The Central Plain has [no large water reservoirs of their own](http://www.tdri.or.th/library/quarterly/text/drought.htm) and must rely on dams in the country's lower Northern region for water. Due to the long periods of droughts each year this has led to a decrease in the amount of water flowing into the dams. The long durations of these droughts are also impacting the production of rice. Thailand is the world's largest rice exporter and the agricultural sector takes up [70% of the nation's total water supply.](http://www.flar.org/index.php/en/news/440-thailands-rice-production-to-take-a-battering-from-drought-as-water-crisis-looms) This has become an emerging problem because [farmers have expanded farming](http://www.nationmultimedia.com/2007/03/11/opinion/opinion_30028990.php) outside of irrigated zones. Many farmers also do not conserve water and have failed to plan crop production efficiently. On the other hand, Thailand also faces a flooding crisis, with many regions facing lengthy heavy rainfall. This has led [to agriculture and livestock damage](http://newsinfo.inquirer.net/breakingnews/world/view/20101102-300998/Thailands-flood-crisis-hits-south-clears-hospital) along with effects on people's health.

Water scarcity is a global threat that is estimated to hit Thailand [hard by 2025](http://www.bangkokpost.com/business/economics/26805/thais-warned-of-looming-water-crisis). The country must develop a long-term plan to manage these challenges. Effective water management needs to be implemented in Thailand, especially in effectively dealing with flood and drought problems.

# Water in Crisis - Spotlight on Vietnam

**By: Sahisna Suwal**

Located in the Southeastern part of Asia, Vietnam's population totals to over 86 million with an estimated [GDP per capita of $3100](https://www.cia.gov/library/publications/the-world-factbook/geos/vm.html). Vietnam is the 13th most populous country in the world and almost two-thirds of its people live along the country's three main river basins- [Thai Binh, Mekong Delta and Dong Nai.](http://www.adb.org/Documents/Brochures/Water-Vital-VietNam-Future.pdf)

Vietnam has [2360 rivers totaling to more than 10 km](http://www.wepa-db.net/policies/state/vietnam/overview.htm) and it would appear that this should provide copious supply of water to the nation. However, due to the lack of physical infrastructure and financial capacity there is low utilization of the supply along with an uneven distribution of rain fall resulting in water shortages throughout the country. Although Vietnam has improved its water supply situation in the past few decades, many rural parts of the country who are often the poorest communities, have not seen significant improvement. It is reported that only [39% of the rural population](http://www.idrc.ca/en/ev-27248-201-1-DO_TOPIC.html) has access to safe water and sanitation. The rural population has moved from using surface water from shallow dug wells to groundwater pumped from private tube wells. In the Northern region of Vietnam around Hanoi, there is evidence of [arsenic contamination](http://www.sciencedaily.com/releases/2001/07/010706081137.htm) in the drinking water. About 7 million people living in this area have a severe risk of arsenic poisoning and since elevated levels of arsenic can cause cancer, neurological and skin problems, this is a serious issue.

In addition, due to the rapid economic development in Vietnam, river water quality has been affected along with an increased concentration of various toxins in the water. The surface water in the rivers is locally polluted by [organic pollutants](http://www.wepa-db.net/pdf/0810forum/paper16.pdf) such as oil waste and solids. There is also pollution from untreated waste water released by industries and agriculture activities. The geography and topography of Vietnam also makes the country [susceptible to natural hazards](http://www.wepa-db.net/policies/state/vietnam/overview.htm) such as typhoons, storms, floods and drought. This then leads to a multitude of problems such as water pollution and waterborne diseases along with an impact on agricultural lands and livestock. Both the environmental pollution in these river basins and natural disasters affects the nation's public health. The Ministry of Natural Resources and Environment state that almost [80% of the diseases](http://www.ngocentre.org.vn/content/80-diseases-vietnam-caused-polluted-water-resources) in Vietnam are caused by polluted water. There are many cases of cholera, typhoid, dysentery and malaria each year in the country.

It is without doubt that agriculture has the largest burden on water resources in Vietnam. Vietnam is one of the richest agricultural regions in the world and a top producer and consumer of rice. Currently, water used for agriculture purposes take up over [80% of total water production](http://www.icid.org/v_vietnam.pdf). Paddy rice is the primary crop that takes up a majority of the total irrigated area. Fisheries, aquaculture, industries and services also [contribute to water demand](http://www.wepa-db.net/policies/state/vietnam/overview.htm) increase.

Water resources are very significant, especially natural water sources in the rural areas of Vietnam as they are the sources of economic, social and cultural activities. The government of Vietnam is [tackling the water resources management](http://www.wepa-db.net/policies/state/vietnam/overview.htm) issues in the country by implementing policies and programs relating to this. Some of the challenges that still exist include improving access to clean water and sanitation for both urban and rural population, improving public participation and knowledge and strengthening river basin management.